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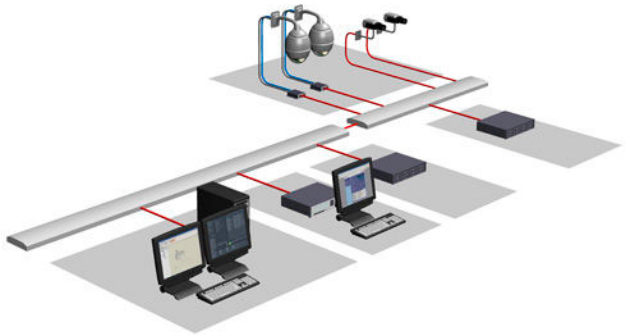
MVM-BVRM Video Recording Manager v2.10



- **Distributed storage and configurable load balancing**
- **iSCSI disk array failover for extra reliability**
- **Used with all Bosch Video-over-IP cameras and encoders**
- **Configuration support for all Bosch disk arrays (DVA and DSA series)**

Bosch Video Recording Manager (VRM) provides a Distributed Network Video Recorder solution, eliminating the need for dedicated NVRs and signaling the second generation of IP network video recording. VRM supports iSCSI-based storage systems and Bosch Video-over-IP devices (IP cameras and IP video encoders).

VRM introduces the concept of a storage virtualization layer. This abstraction layer enables VRM to manage all of the individual disk arrays in the entire system as a single “virtual” common pool of storage, which is intelligently allocated as needed.

VRM eliminates the need for Network Video Recorders (NVRs) and their associated server hardware, operating systems, and anti-virus software, as well as the ongoing software patches and updates these systems require.

This new technology makes installation, operation, and maintenance much easier while reducing the total cost of ownership.

System Overview

The Video Recording Manager is comprised of the

- Recording Management Service (VRM Server)
- configuration client (VRM Configurator)
- playback client (Archive Player)

The central Recording Management Service runs as a service on Microsoft Windows platforms. Bosch recommends running VRM Server on a dedicated server/ hardware platform.

VRM offers system-wide recording, monitoring, and management of Bosch iSCSI storage, video encoders, and cameras.

VRM software supports Bosch H.264 and MPEG-4 IP video devices including all encoders, Dinion and FlexiDome IP cameras, as well as AutoDome and Extreme IP cameras. Supported storage subsystems include the Bosch iSCSI-based DVA and DSA Series disk array systems. The iSCSI disk arrays can be attached anywhere on a standard IP network.

VRM 2.10 offers additional redundancy and data availability by supporting Automatic Network Replenishment (ANR) with Bosch Video-over-IP devices (BVIP Firmware 4.0 or later required).

Optimal Performance

The Video Recording Manager offers a high-performance, flexible, scalable, and a highly reliable iSCSI storage management solution.

Optimized performance is obtained by the use of intelligent addressing on a block level, which also allows for load balancing of the video recording to all available storage blocks located on any storage array in the system.

Load balancing is provided with respect to the bandwidth and the number of iSCSI connections and is configurable per IP address (iSCSI target).

Logical Virtualization

The VRM virtualization layer allows the scalability of storage beyond the physical limits of a single storage subsystem. This logical abstraction layer means that each camera can use any storage space it actually needs, rather than an allocated, arbitrary, discrete chunk ahead of time. Adjust retention times of video data as required.

Fast Recording and Retrieval

VRM provides fast and flexible retrieval via a search database of recordings and metadata. Metadata is a form of data that describes other data such as events, ATM/POS information, and video content analysis data. The metadata is recorded with the video data and provides a fast and efficient way for the search engine, in the playback client, to quickly locate specified video clips. The database also keeps track of the location of recording blocks. If this database is lost, VRM can recreate the database by reading the stored metadata, thus providing a self-healing capability.

Distributed Storage

VRM not only provides for redundant management of metadata, it also introduces a significant enhancement of overall reliability and availability. By providing redundancy for storage provisioning and a failover design for the central recording management service, there is no single point of failure. In addition, unlike NVR systems, VRM scales without requiring additional PCs. This greatly reduces the risk of system failures.

Functions

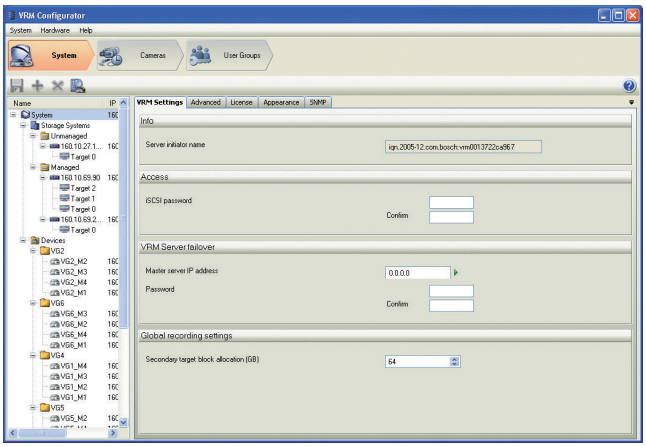
VRM Server

VRM Server, with the central Recording Management Service, maintains a database containing the recording source information and a list of associated iSCSI drives. The central monitoring includes a Web-based user interface for status monitoring. This provides system status overview, recording status information, as well as for live view and recording preview for single cameras.

VRM Server

Configuration Client

The configuration client allows for central configuration of the network storage subsystems, recordings (including schedules), data rate, frame rate, stream, and privileges, as well as for managing user accounts.



Configuration Client

Playback Client

The playback client takes advantage of Bosch's powerful and flexible VideoSDK. Advanced playback capabilities include trick replay with variable-speed forward/reverse play, video export to file, replay of video from file, as well as playback from Bosch video encoders and the VIDOS-NVR.

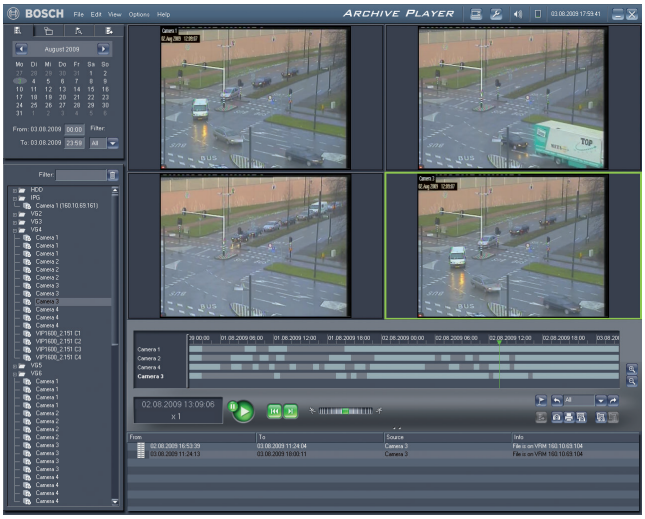
VRM 2.10 supports two alternative ways of replaying video data: either by directly connecting the playback client to the iSCSI disk arrays or through the VRM Server. When using the direct replay each playback client consumes one iSCSI session per iSCSI target and provides up to 32 simultaneous camera replay sessions.

When replay is done through the VRM, only the VRM consumes one iSCSI session per iSCSI target and delivers up to 32 simultaneous camera replay sessions. The camera replay sessions can be increased by the secondary VRM server. The playback client does not consume iSCSI sessions.

The playback client supports synchronized replay of up to four camera streams.

The playback client also provides fast and flexible image retrieval based on block-based motion detection, metadata search, and forensic Video Content Analysis (VCA).

Note Video export and VCA Forensic Search require a separate license.



Playback Client

Automatic Network Replenishment ANR

A VRM server can perform maximum 3 ANR jobs simultaneously. If you configure multiple ANR jobs for 1 device (for example with 4 channels), these jobs are performed one after the other. This avoids overload of the device. The number of ANR jobs cannot be increased by a secondary VRM server. The maximum performance is 24-times of replay, the actual performance may be limited by the capabilities of the encoder/camera.

ANR is only effective for data within the minimum retention time of the system. Recording gaps outside the minimum retention time will not be considered.

Backup of data through VRM

A VRM server can execute maximum 5 backup jobs in parallel. The number of backup jobs cannot be increased by a secondary VRM server. The maximum performance is 24-times of replay, this must be considered for bandwidth estimation of the iSCSI targets.

Licensing

Existing VRM 2.0 licenses can be used for VRM 2.10.

Installation/Configuration Notes

VRM Components

The Video Recording Manager consists of the following components which may be installed on separate systems.

- VRM Server (central Recording Management Service) with Web interface for VRM Monitor
- VRM Configurator
- Archive Player (playback client)

VRM Monitor

- Displays overall system status information, including uptime, bit rate, and retention times.
- Provides status information on recordings and storage.
- Displays live view and recording previews for a single camera.

VRM Configurator

- Allows configuration of the iSCSI storage subsystems.
  - Bosch DVA Series (Bosch OEM Disk Arrays)
  - Bosch DSA Series (NetApp Storage Systems)
- Allows configuration of recording parameters, including schedules, data rates, frame rates, streams, and privileges.
- Allows management of users and groups with privileges and roles.
- Allows configuration of load balancing parameters (bandwidth and iSCSI connections) per disk array (IP address).

Archive Player

- Provides replay and search functionality.
- Support for Contour Design ShuttlePRO V.2.

Technical Specifications

Bandwidth

- 1 Gbit network (recommended)

Supported languages

- Arabic, Czech, English, German, Danish, Dutch, Finnish, French, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Portuguese, Polish, Russian, Spanish, Simplified Chinese, Swedish, Thai, Traditional Chinese and Turkish

VRM Server (running as a service)

- Windows XP Professional SP3
- Windows 7 Professional and Windows 7 Ultimate N
- Windows 2003 Server R2, Standard Edition with SP2
- Windows 2003 Server R2, Standard Edition
- Windows 2008 Server R2, Standard Edition

Recommended Bosch Server Hardware

- <100 cameras: MHW-S360R6-LL
- <350 cameras: MHW-S380R6-EL
- >350 cameras: MHW-S380R6-MC

Browser

- Replay only with Microsoft Internet Explorer, v7.0 or 8.0
- All other functions allowed with a wide range of browsers

Configuration and Playback

VRM Configurator:

- Windows XP Professional SP3
- Windows 7 Professional and Windows 7 Ultimate N
- Windows 2003 Server R2, Standard Edition with SP2
- Windows 2008 Server R2, Standard Edition

Playback Client:

- Windows XP Professional SP3
- Windows XP Professional x64
- Windows Vista SP2

Note Up to 2048 cameras are supported within a single VRM environment. When planning for larger environments it is strongly recommended to use large sized disk arrays instead of a large number of small disk arrays (vertical scaling instead of horizontal scaling). The number of disk arrays to be used within one VRM installation should not exceed 40. For systems with more than 40 disk arrays, please contact a Bosch Design Engineer.

Ordering Information

MVM-BVRM-016 Bosch VRM 2.0 base package with a 16-camera license single-pack. VRM 2.0 licenses can be used for VRM 2.10.	**MVM-BVRM-016**
MVM-SVRM-BAK Bosch VRM 2.0 Secondary Server single-pack. VRM 2.0 licenses can be used for VRM 2.10.	**MVM-SVRM-BAK**
MVM-XVRM-016 16-camera upgrade license	**MVM-XVRM-016**
MVM-XVRM-032 32-camera upgrade license	**MVM-XVRM-032**

Ordering Information

MVM-XVRM-064 64-camera upgrade license	**MVM-XVRM-064**
MVM-XVRM-128 128-camera upgrade license	**MVM-XVRM-128**
MVM-XVRM-256 256-camera upgrade license	**MVM-XVRM-256**
MVM-XVRM-512 512-camera upgrade license	**MVM-XVRM-512**
MVM-XVRM-1024 1024-camera upgrade license	**MVM-XVRM-1024**
MVM-XVRM-2048 2048-camera upgrade license	**MVM-XVRM-2048**
Accessories	
MHW-S360R6-LL Management Server Entry-level server, standard performance (localization kit must be ordered separately)	**MHW-S360R6-LL**
MHW-S360R6-LLUS Management Server Entry-level server, standard performance, including US localization kit	**MHW-S360R6-LLUS**
MHW-S380R6-EL Management Server Mid-range server, advanced performance with internal hard disks (localization kit must be ordered separately)	**MHW-S380R6-EL**
MHW-S380R6-ELUS Management Server Mid-range server, advanced performance with internal hard disks, including US localization kit	**MHW-S380R6-ELUS**
MHW-S380R6-MC Management Server Upper-mid-range server, high performance (localization kit must be ordered separately)	**MHW-S380R6-MC**
MHW-S380R6-MCUS Management Server Upper-mid-range server, high performance, including US localization kit	**MHW-S380R6-MCUS**
MHW-AWLCK-DE Localization Kit Localization (OS/keyboard): Germany—German	**MHW-AWLCK-DE**
MHW-AWLCK-FR Localization Kit Localization (OS/keyboard): France—French	**MHW-AWLCK-FR**
MHW-AWLCK-IT Localization Kit Localization (OS/keyboard): Italy—Italian	**MHW-AWLCK-IT**
MHW-AWLCK-UK Localization Kit Localization (OS/keyboard): United Kingdom—British English	**MHW-AWLCK-UK**
Software Options	
MVC-FAPFS Archive Player IVA Forensic Search license	**MVC-FAPFS**
MVC-FAPEX Archive Player Exporter license	**MVC-FAPEX**

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